

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): A method for electronically detecting at least one specific interaction between probe molecules fixed to at least one active zone of a sensor and target biomolecules, ~~characterized in that~~ wherein said sensor ~~consists of~~ comprises an array of field-effect transistors ( $T_1, T_2, \text{etc.}$ ), each of which has a source region (~~S~~), a drain region (~~D~~), and a gate region which constitutes an active zone (~~3~~) on which said specific interaction is to be detected, and ~~in that it comprises the following steps~~ wherein said method comprises:

- a) ~~bringing contacting~~ at least one active zone (~~3~~) ~~into contact~~ with ~~probe molecules~~ a probe molecule of a given type fixed to said active zone,
- b) ~~bringing contacting~~ at least some of the probe molecules ~~into contact~~ with target biomolecules capable of ~~interaction~~ interacting with said probe molecules, ~~and performing a said interaction~~ in a reaction buffer having a first salt concentration,
- c) measuring at least one point of a drain current, a source-gate voltage, or a source-drain voltage ~~the drain current/source-gate voltage/source-drain voltage~~ characteristic of at least one transistor of said array to detect said specific interaction at least for a measurement point obtained in a measuring buffer having a second salt concentration that is lower than the first concentration for probe molecules having been subjected to said specific interaction,

said measurement being ~~carried out~~ conducted spatially by means of a difference between said measurement point and a reference point, in ~~[[a]]~~ said measuring buffer, for ~~two groups of~~ probe molecules fixed to distinct active zones, the measuring point being obtained for probe molecules having been subjected to the interaction of step b) and the reference point being obtained for probe molecules not having been subjected to the interaction of step b) that have not been subjected to a specific interaction or by means of a difference between

~~two measurement points obtained in a said measuring buffer for probe molecules having been subjected to two different interactions.~~

Claim 2 (Currently Amended): The method ~~as claimed in~~ of claim 1, ~~characterized in that wherein~~ said reference point is determined from probe molecules of the same type as those that were subjected to said specific interaction, and having even the same sequence or a different sequence.

Claim 3 (Canceled):

Claim 4 (Currently Amended): The method ~~as claimed in~~ of claim 1, ~~characterized in that wherein~~ said the probe molecules subjected to said two different interactions are of the same type, whether or not they have identical sequences.

Claims 5 – 6 (Canceled):

Claim 7 (Currently Amended): The method of claim 1, ~~characterized in that wherein~~ said ~~measurement of at least one point of the characteristic uses the application of~~ measuring at least one point of a drain current, a source-gate voltage, or a source-drain voltage characteristic comprises applying a given voltage ( $U_{DS}$ ) between the drain and the source of at least one transistor, and ~~also the application~~ applying, in a first case, ~~[[of]]~~ a given voltage ( $U_{GS}$ ) between the gate and the source of said transistor or, in a second case, ~~[[of]]~~ a given drain current ( $I_D$ ), to said transistor.

Claim 8 (Currently Amended): The method ~~as claimed in~~ of claim 7, ~~characterized in that~~ wherein, in the first case, the point is obtained by measuring the drain current  $I_D$  and, in the second case, by measuring the voltage  $U_{GS}$  between the gate and the source.

Claim 9 (Currently Amended): The method of claim 1, ~~characterized in that~~ wherein the measuring buffer is KCl.

Claim 10 (Currently Amended): The method of claim 1, ~~characterized in that~~ wherein the concentration of the reaction buffer is between 20 mM and 1 M.

Claim 11 (Currently Amended): The method ~~as claimed in~~ of claim 10, ~~characterized in that~~ wherein the concentration of the measuring buffer is greater than 0.002 mM and less than 20 mM.

Claim 12 (Currently Amended): The method ~~as claimed in~~ of claim 11, ~~characterized in that~~ wherein the concentration of the measuring buffer is at least equal to 0.01 mM.

Claim 13 (Currently Amended): The method of claim 11, wherein ~~as claimed in either of claims 11 and 12, characterized in that~~ the concentration of the measuring buffer is at most equal to 15 mM.

Claim 14 (Currently Amended): The method of claim 1, ~~characterized in that~~ wherein the passage between one buffer and a buffer of lower concentration is separated by a rinsing step.

Claim 15 (Currently Amended): The method of claim 1, ~~characterized in that~~ wherein the probe molecules are molecules, in particular biomolecules, capable of being recognized by a type of target biomolecule.

Claim 16 (Currently Amended): The method ~~as claimed in~~ of claim 15, ~~characterized in that~~ wherein the probe molecules and/or the target biomolecules are DNA, RNA or protein molecules, or else vitamins.

Claim 17 (Currently Amended): The method ~~as claimed in~~ of claim 16, ~~characterized in that~~ wherein the probe biomolecules are DNA molecules and in that the field-effect transistors are of the depleted n-channel type, with a negative gate bias.

Claim 18 (Currently Amended): The method of claim 1, ~~characterized in that it~~ wherein said method further comprises, before a), at least one control measurement step with a said measuring buffer.

Claim 19 (Currently Amended): The method of claim 1, ~~characterized in that it~~ wherein said method further comprises the circulation of at least one solution which constitutes a reference or which contains target molecules through at least one microfluidic channel so as to bring it into contact with at least one said field-effect transistor.

Claim 20 (New): The method of claim 12, wherein the concentration of the measuring buffer is at most equal to 15 mM.